

Amendments to the Claims:

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Amended) Method according to Claim 44 6, including the step of providing a carrier fluid in the measurement chamber, thereby diluting the portion of the fuel mixture permeated into the measurement chamber.
5. (Cancelled)
6. (Amended) Method for regulating the fuel concentration in a fuel mixture for a fuel cell, the fuel mixture consisting of an alcohol or an ether as the fuel and water, comprising the steps of:

feeding the fuel via a controllable fuel inlet to a mixing space;

forming a fuel mixture within the mixing space;

providing a measurement probe comprising a measurement chamber and a membrane that delimits the measurement chamber and is selectively permeable to water and the fuel in the fuel mixture;

positioning said selectively permeable membrane downstream of the fuel inlet relative to the direction of flow of the fuel mixture, so that the selectively permeable membrane is in contact with the fuel mixture;

permeating a portion of the fuel mixture through the selectively permeable membrane into the measurement chamber thereby forming a measurement mixture within the measurement chamber, wherein the fuel concentration in the measurement mixture is greater than 5% by volume, the rate at which the fuel permeates into the measurement chamber being related to the composition of the fuel mixture;

determining the concentration of the fuel in the measurement mixture by means of a liquid sensor, Method according to Claim 5, wherein said determining step includes

measuring a physical property of the measurement mixture selected from the group consisting of density, viscosity, an optical characteristic, infrared adsorption, or a combination of said properties; and

controlling the flow rate of the fuel at said fuel inlet as a function of the fuel concentration in the measurement mixture.

7. (Cancelled)

8. (Cancelled)

9. (Amended) Method for regulating the fuel concentration in a fuel mixture for a fuel cell, the fuel mixture consisting of an alcohol or an ether as the fuel and water, comprising the steps of:

feeding the fuel via a controllable fuel inlet to a mixing space;

forming a fuel mixture within the mixing space;

providing a measurement probe comprising a measurement chamber and a membrane that delimits the measurement chamber and is selectively permeable to water and the fuel in the fuel mixture;

positioning said selectively permeable membrane downstream of the fuel inlet relative to the direction of flow of the fuel mixture, so that the selectively permeable membrane is in contact with the fuel mixture;

permeating a portion of the fuel mixture through the selectively permeable membrane into the measurement chamber thereby forming a measurement mixture within the measurement chamber, Method according to Claim 14, wherein the fuel concentration in the measurement mixture is less than 1.0% by volume, and the rate at which the fuel permeates into the measurement chamber being related to the composition of the fuel mixture; is determined

determining the concentration of the fuel in the measurement mixture by means of a gas sensor, wherein said gas sensor comprises a semiconductor element which changes its electrical properties as a function of the fuel concentration; and

controlling the flow rate of the fuel at said fuel inlet as a function of the fuel concentration in the measurement mixture.

10. (Amended) Method according to Claim 9, wherein said determining step includes measuring a physical property of the measurement mixture selected from the group consisting of an optical property, thermal conductivity, infrared absorption or a combination of said properties.

11. (Cancelled).

12. (Cancelled)

13. (Amended) Fuel cell system, having a fuel cell which can be operated with a fuel mixture consisting of an alcohol or an ether as fuel and water and a mixing space, said mixing space having a controllable fuel inlet positioned upstream of the fuel cell relative to the direction of flow of the fuel mixture and being connected to the fuel cell by a fuel-mixture feedline, said fuel cell system comprising a measurement probe associated with the mixing space, said measurement probe including

a measurement chamber;

a membrane that delimits the measurement chamber and is selectively permeable to water and the fuel in the fuel mixture, said selectively permeable membrane being positioned downstream of the fuel inlet relative to the direction of flow of the fuel mixture such that a quantity of fuel related to the concentration of fuel in the fuel mixture permeates through said membrane into said measurement chamber per unit time; and

a sensor for determining the fuel concentration in the measurement chamber  
~~Fuel cell system according to Claim 18, wherein said sensor measures a physical property related to the fuel concentration in said measurement chamber, said physical property being~~

selected from the group consisting of infrared absorption, density, viscosity, an optical property or thermal conductivity, said fuel cell system further comprising means for controlling the fuel inlet as a function of the fuel concentration in the measurement chamber.

14. (Cancelled).

15. (Amended) Method according to Claim 14 6, including the step of selecting said permeable membrane so that the concentration of the fuel in the portion of the fuel mixture permeating said permeable membrane is greater than the concentration of the fuel in the fuel mixture.

16. (Amended) Method according to Claim 14 6, including the step of selecting said permeable membrane so that the concentration of the fuel in the portion of the fuel mixture permeating said permeable membrane is less than the concentration of the fuel in the fuel mixture.

17. (Amended) Method according to Claim 14 6, including the step of passing a carrier fluid through the measurement chamber, thereby conveying the portion of the fuel mixture out of the measurement chamber.

18. (Cancelled)

19. (New) Method according to Claim 9, including the step of providing a carrier fluid in the measurement chamber, thereby diluting the portion of the fuel mixture permeated into the measurement chamber.

20. (New) Method according to Claim 9, including the step of selecting said permeable membrane so that the concentration of the fuel in the portion of the fuel mixture permeating said permeable membrane is greater than the concentration of the fuel in the fuel mixture.

21. (New) Method according to Claim 9, including the step of selecting said permeable membrane so that the concentration of the fuel in the portion of the fuel mixture

permeating said permeable membrane is less than the concentration of the fuel in the fuel mixture.

22. (New) Method according to Claim 9, including the step of selecting said permeable membrane so that the concentration of the fuel in the portion of the fuel mixture permeating said permeable membrane is less than the concentration of the fuel in the fuel mixture.